Future Earth
Research for Global Sustainability
Global Change
International Geosphere-Biosphere Programme
Issue 76 II March 2012

ANTHROPOCENE
The geology of humanity

Urban expansion
No signs of slowing
Natural catastrophes
2011 breaks records

www.igbp.net
Earth-system science for a sustainable planet

GLOBAL
IGBP
CHANGE

ICSU
Future Earth: building from the GEC programmes

Global Environmental Change Programmes


and their partnership

FUTURE EARTH
MANAGING THE RISKS OF EXTREME EVENTS AND DISASTERS TO ADVANCE CLIMATE CHANGE ADAPTATION

SPECIAL REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

NUMBER OF “GREATER” & “DEVASTATING” GLOBAL DISASTERS (AS DEFINED BY MUNICH RE) SINCE 1980 INDICATED BY TYPE OF EVENT

Biological diversity
Some of the challenges we face

• Feeding 9 billion people within sustainable planetary boundaries
• Valuing and protecting nature’s services and biodiversity
• Adapting to a warmer and more urban world
• Transitioning to low carbon societies
• Providing income and innovation opportunities through transformations to global sustainability
• Reducing disaster risks
• Aligning governance with stewardship
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<thead>
<tr>
<th>Reason</th>
<th>Rank 1</th>
<th>Rank 2</th>
<th>Rank 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Information at Relevant Scales</td>
<td>90</td>
<td>70</td>
<td>57</td>
</tr>
<tr>
<td>Budget Constraints</td>
<td>97</td>
<td>53</td>
<td>60</td>
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<tr>
<td>Uncertainty in Available Information</td>
<td>63</td>
<td>51</td>
<td>71</td>
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<tr>
<td>Lack of Specific Agency Direction</td>
<td>59</td>
<td>75</td>
<td>51</td>
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<tr>
<td>Lack of Useful Information</td>
<td>33</td>
<td>63</td>
<td>46</td>
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<td>Not a High Priority in My Office</td>
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<td>Conflicting Mandates</td>
<td>39</td>
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<td>Stakeholder Conflicts</td>
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<td>Personnel Constraints</td>
<td>13</td>
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A 10-year initiative by a new global Alliance

Future Earth: research for global sustainability

WMO is an observer
Future Earth

To provide the knowledge required for societies in the world to face risks posed by global environmental change and to seize opportunities in a transition to global sustainability.
Future Earth: can we answer ...

How and why the global environment is changing, what are likely future changes, what the implications are for human wellbeing and other species, what choices can be made to reduce harmful risks and vulnerabilities and enhance resilience, and how this knowledge can support decisions and sustainable development?
The challenges of global environmental change and sustainable development require some new approaches which are:

- More international
- More interdisciplinary
- More collaborative
- Co-designed with users, funders…
- More responsive to society and grand challenges of sustainability
- Builds on the success of current international research programmes
The Transition Team

Many disciplines, sectors, regions

for a truly new co-design effort

17 individual capacity members, 12 ex-officio (ICSU, ISSC, Belmont Forum, UNESCO, UNU, UNEP) and Global Environmental Change Programme Directors
Transition Team deliverables

- An initial research framework
- An institutional design
- A strategy for outreach, education, stakeholder engagement
- A name for the initiative
Organizing Future Earth research

A conceptual framework
A number of “integrated research” themes:
• thematic areas in which interdisciplinary research will be carried out
• a number of key research questions under each theme
• populated by existing/new projects
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<th><strong>Future Earth: Proposed Integrated Research Themes</strong></th>
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<tr>
<td>1</td>
<td><strong>A Changing Planet</strong>: Understanding earth, ecological and societal system trends, drivers, processes, and projections</td>
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<td>2</td>
<td><strong>Resources for development and wellbeing</strong>: ensuring the sustainable provision of food, water, health and ecosystem services</td>
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<td>3</td>
<td><strong>Low Carbon Societies</strong>: Linking Climate Change, Energy and the Economy</td>
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<td>4</td>
<td><strong>Living with the Sea</strong>: Oceans, coasts and blue societies</td>
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<td><strong>Reducing the risk of catastrophes</strong>: Global thresholds and disaster risk reduction</td>
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<td>6</td>
<td><strong>Pivotal places</strong>: Cities, regions, and critical biomes</td>
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<td>7</td>
<td><strong>Global Responses</strong>: Managing change and governing the environment</td>
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<td>8</td>
<td><strong>Transformative Pathways</strong>: Fundamental changes for a Sustainable, Inclusive and Prosperous Future Future Earth</td>
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<td>9</td>
<td>Other themes to be proposed by the scientific community.....</td>
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Living with the sea: oceans, coasts and blue societies - Example research questions

• What might adaptive management strategies contribute to resilient coastal zones?
• How much and what kind of food will the oceans provide to future societies?
• What is the capacity of the ocean to take up CO$_2$?
• How to govern sustainable fisheries?
• How do land-use and open ocean changes influence coastal habitats and marine biodiversity?
• What are the regional impacts of sea level rise and their interaction with coastal use and protection?
Crosscutting capabilities

- Observing systems
- Data systems
- Earth system models
- Theory development
- Synthesis and assessments
- Capacity development and education
- Communication and the science-policy interface
Future Earth: concerns

- Top-down
- Community engagement
- Disciplinary and interdisciplinary research
- Form before function
- Implementation plan
- Funding uncertainties
Future Earth: next steps

• Early actions
  • Launch – PuP and Rio+20
  • Belmont Collaborative Research Actions on coasts and water
  • ISSC transformations to sustainability project

• Consultations – second half 2012
  • Research Framework
  • Projects and programmes
  • Regional perspectives
Future Earth will be a global platform to deliver:

- **Solution-orientated** research for sustainability, linking environmental change and development challenges to satisfy human needs for food, water, energy, health;
- **Effective interdisciplinary collaboration** across natural and social sciences, humanities, economics, and technology development, to find the best scientific solutions to multi-faceted problems;
- **Timely information for policy-makers** by generating the knowledge that will support existing and new global and regional integrated assessments;
- **Participation of policy-makers, funders, academics, business and industry, and other sectors of civil society in co-designing and co-producing research agendas and knowledge**;
- **Increased capacity building** in science, technology and innovation, especially in developing countries and engagement of a new generation of scientists.

**Integrating existing endeavours**

Future Earth will build on the success of existing global environmental change programmes (Diversitas, IGBP, IHDP, WCRP), to help develop a stronger and broader community. The **Planet Under Pressure conference** (London, March 2012) was a step towards this goal, with wide support of Future Earth as one of its major outcomes.